PATENT ABSTRACTS OF JAPAN

(11)Publication number:

2000-321606

(43)Date of publication of application: 24.11.2000

(51)Int.CI.

G02F 1/35

(21)Application number: 11-133423

(71)Applicant: FUJITSU LTD

(22)Date of filing:

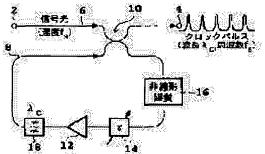
14.05.1999

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(54) METHOD, APPARATUS AND SYSTEM FOR REPRODUCTION AND APPLICATION OF **OPTICAL CLOCK**

(57) Abstract:

PROBLEM TO BE SOLVED: To reproduce an optical clock without execution of opto/electric conversion and without depending upon the bit rate, pulse shape, etc., of signal light relating to a method, apparatus and system for reproduction and application of the optical clock. SOLUTION: This information relates to the optical device for reproducing the optical clock. The optical device has an optical path 6 disposed between an input port 2 to which the signal light modulated by a frequency first fs is supplied and an output port 4 and an optical loop 8 which is optically coupled to the optical path 6. The optical loop 8 includes an optical amplifier 12 which compensates the loss of the optical loop 8 in such a manner that laser oscillation is generated by the optical loop 8, an adjuster 14 which adjusts the optical path length of the optical loop 8 in such a manner that the frequency fs attains integer times the inverse number of the cyclic period of the optical loop 8 and a nonlinear



oscillation in accordance with the signal light. Four light wave mixing with the signal light as pumping light is induced by a cubic nonlinear effect and amplitude modulation is generated in the nonlinear optical medium. The optical clock is thus reproduced at the laser oscillation wavelength.

LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

optical medium 16 for mode locking of the laser

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection] [Date of requesting appeal against examiner's decision of rejection] [Date of extinction of right]

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